



SDMS DocID

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**Background:**

The Elkton Farm Firehole site is located two miles northwest of Elkton, Maryland near the intersection of Routes 40 and 279. The Firehole Site occupies approximately 55-acres of the 400-acre Elkton Farm and is located just south of Zeitler Road between Little Elk Creek and Laurel Run. The most recent use of the Site has been as a working farm. During the decade before and during World War II, the parcel had been the site of activity related to the manufacture of fireworks and munitions. Investigations performed in 2006 by the Army Corps of Engineers identified an area on the current Elkton Farm as the Firehole. The Firehole was documented as an area for the disposal of waste explosives material during and just after WWII. Ordinance related material was observed scattered on the ground throughout the site.

**Chronology**September 2006

EPA ERRs contractor [Guardian Environmental Services Company, Inc. (GES)] was issued a Task Order requiring site maintenance and site security. At an on site "handover" meeting on September 5 between the EPA, MDE, USACE, IPC and GES, logistics and planning for the handover was conducted. The USACE agreed to keep both the site trailer and magazines on site for EPA use. GES subcontracted site security effective September 15.

On September 12, 2006 EPA conducted a meeting with MDE to discuss future removal activities and overall scope of work to complete surface detection and removal of MEC as well as pit excavation activities. The EPA OSC plans to develop a scope of work for ERRs completion of the removal activities.

On September 13, 14 and 15, EPA and its ERRs contractor mobilized to the site to effect backfilling of the excavated pits to ensure optimum health and safety. A UXO tech escort contractor was onsite to assist with avoidance issues and to guide the operators

October 2006

Site security was maintained on a 24-hour basis.

November 2006

The ERRS subcontractor continued site security.

On November 9, 2006 the OSC and MDE entertained Region III ERRs contractors for Task Order competition and site walk thru. The meeting lasted two hours and all questions were answered by the OSC. All proposals for site cleanup activities were due December 14, 2006.

### December 2006

The ERRS subcontractor continued site security. Proposals for the site cleanup were received by EPA.

### January 2007

The ERRS subcontractor continued site security. The OSC along with assistance from the CO, PO and others completed a review of three technical and cost proposals from the three Region 3 ERRs contractors. Proposals focused on the removal and handling of discarded military munitions and asbestos containing materials from both Phase I and Phase II areas of the site.

### February 2007

On February 12, 2007 EPA issued a Task Order (03-04-018) to GES, Bear, De. The Task Order included the separation and staging of MEC and ACM. The Task Order was issued to cover a time frame of at least six months.

The existing Task Order (014) requiring GES to provide site security services was continued because this Task Order was only 70% completed. In addition to providing site security services, GES also provided construction of a Command Post staging area and electrical drop to the site. This construction was needed to support all work under the new Task Order, 018.

The OSC worked with the ERRs contractor (GES) on the development of various documents. These documents included an overall Work Plan, Accident Prevention Plan (HASP) and Explosive Safety Submission.

On February 27, 2007 the FOSC convened a meeting with the developer (Herron 393 Inc.), MDE, START and ERRS at GES offices in Bear, De. The meeting served as a dialogue between the government and the property owner/developer to engender communications and coordination.

A county bridge consultant issued Little Elk Creek Bridge inspection findings. The bridge crosses the creek, on Zeitler Road (a county road), which is the only access road to the site. The inspection revealed serious degradation issues underpinning the structure and downgraded its maximum load bearing cap from 50,000lbs to 24,000lbs. The new rating severely hampered EPA's ability to move its heavy equipment onto the site. EPA discussed this issue with county officials and the property owner. An alternate road to the site may need to be constructed.

### March 2007

Initial drafts of the overall Work Plan, Accident Prevention Plan (HASP) and Explosive Safety Submission were submitted to the OSC during the week of March 5. The OSC solicited

comments from START, MDE and EPA personnel. The OSC also coordinated the development of a site Sampling Plan (SAP) with START (Tetra Tech Inc).

On March 20, the OSC met with Elkton County Commissioners to discuss proposed site removal plans. On March 27, 2007 the OSC met again with the county Commissioners along with Herron 393.

#### April 2007

GES continued to prepare the site for mobilization of its UXO subcontractor [USA Environmental Inc. (USA)]. This included finalization of the site command post staging area and forward decontamination staging area, mobilization of site office trailers, break trailer, decon trailer and hookups of utilities and other support services.

Herron 393 initiated the construction of the alternate access road to the site. The road will connect the site to Marley Road and allow for EPA to mobilize heavy equipment. The Elk Creek bridge was officially posted with a rated capacity of 24,000lbs., thereby essentially disallowing use by EPA.

On April 17, 2007 the OSC conducted a 2.5 hour conference call to review all comments and to ensure that the contractor was clear regarding the direction and the specificity of the Work plan and Health and Safety plan.

On April 17 EPA received a draft Work Plan and APP, for review, from MDE under the VCP, for Herron 393 assessment and removal of UXO for areas (1095ft radius) surrounding the site. The OSC requested additional time to review and obtain START assistance for review, as well, on this critical document.

On Thursday, April 19, 2007 the ERRs contractor mobilized part of its sub UXO contractor, USA. On April 19 and 20 USA installed grid stakes at each grid corner. On Monday, April 23, 2007 the remainder of the UXO contractor team mobilized.

On Tuesday, April 24 an all day, all hands meeting to discuss the Work Plan was conducted at GES offices in Bear, De. The OSC provided site historical, site direction and health and safety philosophy to all site personnel. Site personnel include 15 USA, 1 Reactive Managements Inc, 5 GES, 2 Tetra Tech and 5 EPA personnel. At the conclusion of this meeting the OSC assisted the site Community Involvement Coordinator with fact sheet distribution to residences nearby the site.

On April 25, 2007 all personnel reported to the site to commence site removal activities. Phase I geographical area consists of the low density grids surrounding the fireholes. It is estimated that there are 30 to 35 Phase I grids. USA utilized a two team approach to Phase 1 activities as per the Work Plan. Activities include clearing of metal anomalies within 1.5ft bgs. Team 1 initiated activities in Grid C4b and Team 2 started in Grid K4c.

On April 26 both teams continue to mag and dig within their grids. EPA conducted an operations meeting in the late afternoon with GES, USA, RMC and TTNUS to discuss productivity, QA/QC and health and safety.

On April 27 workers initiated activities. The morning tailgate safety briefing and ops briefings were conducted as per the WP. Heavy rains hampered site activities. Due to heavy rains and thunderstorm activity, the site was shut down in the mid morning.

#### April 2007 Grid Progress Summary

Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity Of MEC Found
2	0	4

#### May 2007

Daily morning Safety Meetings and Tailgate Meetings continued with site personnel as per the WP. Daily activities included clearing of metal anomalies within 1.5ft bgs.

ERRS and their sub UXO contractor, USA, continued Grid clearance activities in Grids K4c, C4b and C4c. USA continued to utilize a two team approach to Phase 1 activities as per Work Plan.

On 5/1/07 a QC inspection was done to assess Grid K4c. The ERRS sub contractor returned to these Grids to assess and address the findings of the QC inspection. A re-sweep of Grid K4c was completed by Team #2 on 5/2/07.

On 5/3/07, the QC inspection was completed on Grid K4c. EPA performed a 50% QA inspection on Grid K4c to ensure that the Grid had been cleared as per the OSCs discretion. The grid was deemed 'passed.' Grids C4c and K4d sweeping activities were initiated. Team #1 completed a re-sweep of C4b and a QC inspection was completed. EPA conducted an operations meeting in the late afternoon with GES, USA, RMC and TTNUS to discuss productivity, QA/QC and health and safety.

On 5/4 07 EPA performed a 50% QA inspection on Grid C4b and the grid was deemed 'passed' as per the OSCs discretion.

On 5/8/07, a QC inspection was performed to assess Grid C4c. EPA performed a QA inspection on Grid C4c to ensure that the Grid has been cleared as per the OSCs discretion and he grid was deemed 'passed.'

On 5/9/07 team #2 completed a 5.5 day sweep of Grid K4d. In the southern portion of the Grid, an area with a high concentration of anomalies was identified. Considerable excavation was

conducted and no significant anomalies were uncovered. Soils containing conductive or magnetic components were present in the Grid ('Mineralized Ground').

On 5/10/07 a QC inspection was completed on C3d, EPA performed a QA inspection of Grid C3d and the grid was deemed 'passed' per the OSCs discretion. EPA conducted its weekly operations meeting in the late afternoon with GES, USA, RMC and TTNUS to discuss productivity, QA/QC and health and safety.

On 5/11/07 EPA performed a QA of Grid K4d and passed the grid. Team #1 completed sweep of C3b and QC commenced on the Grid at 1530. Both teams continued/begin mag and dig activities in Grids I4c and B3b, as per the OSCs direction.

Two SOPs were finalized by EPA/START/GES:

- a. QA final clearance SOP
- b. Mineralized Ground assessment and clearance

On 5/16/07 teams ceased all intrusive ops due to thunderstorms and lightning in the area as per HASP.

Specific grids that were worked and passed QA included B3b, G5c and B3a. Grids worked and that did not get completed included grid I5c. I5c was a demo area used by the USACE last year to demo approx 2100 burster tubes. As a result numerous burster tubes and other fragmented metal items were detected within the demo holes and adjacent areas. Most of I5c can be completed but unfortunately the area of the demo shot will need to be addressed during Phase II activities. Therefore I5c will not receive QA (Gov't) until then.

#### May 2007 Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity Of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	16	11	1,138	C4B, K4C
TOTALS	18	11	1,140	

#### June 2007

USA continued to mag and dig grids and perform individual grid QC. Two teams of 5 people were separated under the minimum safety distance of 200ft. The QC'd grid was then forwarded on to EPA for final QA. EPA - START UXO tech continued to oversee USA mag and dig performance and completed final QA grid analysis as per SOP developed on site. Each grid received individual signoff by USA, GES, START and finally the EPA OSC.

On 6/7/07 the OSC, START and MDE met with GES to discuss the Phase II soil washing concept design. Based on pilot testing conducted during the previous two weeks it was determined that the most efficient approach would be utilizing a 1.5 inch over a 0.75/0.5 inch mesh screen. Large quantities of percussion primers such as the 55-grain M38A1 and the 20-grain M23A1 were discovered at Elkton Farm Firehole. These items are much smaller than any of the target ordnance identified during previous phases of the investigation. The percussion primers were discovered in larger quantities during pilot sifting operations in grid I4c. The primers were in deteriorated condition and significantly smaller than a dime. The small size sifting screen mesh (<0.5in) that would be required to catch these smaller items severely inhibits the passage of soil through the screen. The hazard presented, by these and similar-sized items, is minimal unless large numbers of the items are collected, confined and detonated in a tightly sealed metal container. Individually, and if in good condition, the items could have a low explosive content on the order of a 0.22 caliber blank for a starter pistol. EPA directed GES to determine the impact of leaving the material onsite with these items present in the soil.

Site personnel continued to communicate and coordinate with neighboring ATK to ensure protection of site personnel during ATK batch testing operations.

The OSC authorized procurement of 10ft popup tents for the two work teams within the grids. This item will provide a shade area for site workers to obtain reprieve from the oppressive sun. Heat stress is routinely and carefully monitored as per site health and safety plan.

GES completed construction of the water recharge basin to support water needs for upcoming Phase II soil washing activities. The basin was located within clean grids along the eastern line of the site. GES also finished construction of the sedimentation pond and prepared the surface area for the wash area and Frac Tanks.

On June 11, 2007 the Bureau of Alcohol Tobacco and Firearms (BATF) performed a Compliance Inspection to determine compliance with various ATF regulations and to calculate the maximum net explosive weight (NEW) permitted to be stored in the site magazines. Based on examination of the magazines (including materials of construction and specifications for thickness, methods of attachment, etc.), BATF determined that the magazines and locks are in complete compliance with ATF regulations. Using the Table of Distances for Storage of Explosive Materials (27 CFR 555.218), as currently sited, the Type 2 magazines at this site may be used to store up to 30,000 pounds NEW.

Due to apparent funding issues, the property owner had not completed the Marley Road access to the site. This impacted the potential for Phase II startup since the Zeitler Rd. bridge access cannot handle the anticipated weight of Phase II equipment to be brought on site such as frac tanks, track hoes etc. Phase II work was delayed as a result.

The OSC continued to conduct weekly project management meeting/conference call, which includes EPA, MDE, START, GES, USA and RMC both field components and their offices.

#### June 2007 Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity Of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	10	5	1,726	I4C, G5B, I2A, J4C,
<b>TOTALS</b>	28	15	2,866	

#### July 2007

GES provided to the OSC a draft Detonator Lead Testing Risk Analysis Work Plan based on OSC request for such. Comments were delivered by FOSC, MDE and other R3 personnel. The Plan was to analyze the very small dets that presumably would drop thru the bottom 1/2inch screen and therefore end up in the sedimentation ponds. GES provided the final plan and then ascertained the risk associated with leaving these items within the sedimentation ponds.

On July 10 and 11, RMC performed a Quality Assurance audit of site activities which included observation of the UXO teams' work practices and a review of selected records to ensure compliance with the work plan. RMC provided the audit report on July 14, 2007. RMC concluded that the work practices observed and documents inspected were in compliance with standard, accepted industry practices and with the Work Plan.

On July 25, 2007 the OSC and site personnel met with Advent and ARM personnel. ARM is the geophysical survey subcontractor hired by property owner to assess the areas surrounding the site whereas Advent is the UXO contractor to lead the UXO work in these areas. The purpose of this initial meeting was to meet and greet, discuss communication and coordination.

On July 26, 2007 the OSC and EPA regional support personnel as well as GES personnel and MDE met with the property owner (Herron 393) to discuss site progress and future work. The Phase II work plan discussions included the mec separation from the soil (the ACM/debris piles to be the resultant); the small item det (<3/8inch) risk study work plan; sediment pond sampling and schedule for completion. Herron 393 planed to followup with MDE - VCP program officials to discuss their future assessment and MEC removal work in the areas surrounding this site.

On July 26 and 27, START personnel retrieved baseline samples from the site as per Sampling and Analytical Plan (SAP). One aqueous sample was retrieved from the recharge pond, one aqueous sample was retrieved from each frac tank (2 total) and a sedimentation sample was retrieved from the sedimentation pond. Samples were forwarded to Ft. Meade (DAS) laboratory for target analyte list (TAL) metals, nitroaromatic compounds, target compound list (TCL) volatile organic compounds (VOC), TCL semivolatile organic compound (SVOC), pesticide,

polychlorinated biphenyls (PCB) and perchlorate. All samples were split with the property owner for his separate analytical purposes.

On July 28, 2007 Advent/Arm initiated site clearance and worked thru the remainder of the year. MDE - VCP was responsible for the oversight.

#### July 2007 Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity Of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	5	4	2,943	I2B, K1A
<b>TOTALS</b>	33	19	5,809	

#### August 2007

GES and RMC implemented the "Small Primer and Detonator Cup Hazard Characterization Study" on Aug 3 and 4, 2007. The draft report was forwarded to the OSC. The draft report concludes that "personnel exposure to small primers/detonator cups containing energetic materials is minimal and/or limited". In addition it concludes "The small primers/detonator cups do not appear to present an explosive risk to personnel, and do not appear to demonstrate the RCRA hazardous waste characteristic for reactivity".

Marley Road construction, which provides for site access of equipment and materials to the site, still has not been finalized. Herron 393 (property owner) had promised construction of such many months ago and reiterated this promise during the July 26 meeting with EPA. Without this access, costs for bringing materials and some equipment to the site in support of Phase II will be increased. The OSC had to determine whether to proceed thereby absorbing the additional costs or wait for the road construction to be completed. In addition, Herron 393 still had not complied with locally posted stop work order, due to lack of erosion control measures, at the excavated Marley Road construction site.

EPA anticipated initiating Phase II excavation activities during the week of September 17, 2007. The Phase II work plan was being reworked to include all materials handling concerns, air sampling for particulate and asbestos and specified regarding the hydro aeration of the commingled debris, MEC, MD and ACM tile. The bottom screen diameter would be 3/8inch which would ensure that all MEC greater than 3/8inch would be captured and handled. The small dets/primers (as per the Small Primer and Detonator Cup Hazard Characterization Study Report) would end up in the sedimentation ponds. ACM tile debris greater than 3/8inch would be stockpiled with the other non MEC debris on site.

The Marley Road construction by Herron 393, was on temporary hold pending release by the County due to inadequate erosion control measures. As previously documented this new road would provide for site access of equipment and materials to the site. Without this access, costs for bringing materials and some equipment to the site in support of Phase II would be increased.

#### August 2007 Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity Of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	10	4	6,684	C3B, D3A, I4D, K4A, G1C, K1B, H4C, J1B
<b>TOTALS</b>	43	23	12,493	

#### September 2007

During the week of September 3, 2007 site activities were limited to construction of the Phase II support items including erection of piping and wash stations. No UXO removal activities occurred because USA was demobed for the holiday.

Phase II work was initiated on 9/18/07. Previously stockpiled soils from high density grids were processed thru the hydro aeration stations. The site Air Monitoring Sampling and Analytical Plan (AMSAP) was implemented during this period. Action thresholds for dust and/or particulate were not exceeded.

The Marley Road construction by Herron 393 was completed. Herron 393 proceeded with the closing off Zeitler Road to local traffic in support of both EPA work and their work.

The OSC finalized the Phase II Work Plan document; reviewed and updated the site HASP specific to Phase II activity hazard analyses and other site related changes; reviewed and submitted a revised Explosive Safety Submission to reflect recent USACE guidance by cob 9/21/07.

Phase II work continued in association with Phase I work. Phase I was surface whereas Phase II was excavation and processing of soils thru the hydroaeration stations. Work was slowed somewhat by vegetative matter removal from the screens.

Air monitoring for dust and paticulate consistently revealed levels less than the TWA standard established for the site by OSHA. Air sampling for asbestos particulate was completed during two separate sampling events. No ACM was detected. Both air monitoring and air sampling for ACM continued thru the excavation process.

The Action Memo governing activities in excess of six million dollars was approved by the EPA Assistant Administrator, OSWER on 9/24/07.

#### September 2007 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	7	2	3,347	J1A, H4D, I1B, I1A, H1B
<b>TOTALS</b>	50	25	15,840	

#### September 2007 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic feet)
	2	0	2,236	8,750
<b>TOTALS</b>	2	0	2,236	8750

#### October 2007

In an effort to determine the extent of the Phase II pits ie. aerial extent, the OSC initiated an addendum to the Phase II Work Plan. This addendum titled "Exploratory Trenching Operations and Modifications to High Density Area Mechanical Excavations", allowed for exploratory trenching to ascertain where the pits were located. This exploratory line trenching helped the OSC to determine the extent and location of Phase II grids. In addition, this document allowed for the transport of soils from the excavation area to the hydroaeration area via unarmored backhoe. The main justification for this was the rather poor visibility for the operator with a blast shield and the minimal potential for unintended detonation during this process.

This line trenching was initiated and completed during this month. This trenching revealed that the area south of the known fireholes appeared not to be pits or fireholes but rather surface metal anomalies spread out over a rather large area. Each line trench was walked with metal detection equipment and revealed only detection in the shallow side walls and nothing along the trench bottoms.

The OSC continued to conduct weekly meeting/conference calls, which included EPA, MDE, Start, GES, USA and RMC both field components and their offices. The OSC continued to participate in biweekly conference calls with MDE, ORC and site assessment regarding site progress and site issues. On October 11, 2007 the OSC conducted a conference call on site via a meeting and site walk thru with all participants.

### October 2007 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	6	2	1,043	C3C, F5B, D4D, D4A, D3B
<b>TOTALS</b>	56	27	16,883	

### October 2007 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic feet)
	8	6	3,213	13,635
<b>TOTALS</b>	10	8	5,449	22,385

### November 2007

Air sampling for asbestos fibers were completed on seven separate sampling events and no ACM fibers of any appreciable quantity were detected.

An evaluation of the type of MEC items found on the screens within the Phase II soil hydro aeration separation process revealed the following stats:

3047 items on the top screens

1516 items on the bottom screens

4563 total MEC items.

Site removal activities were limited to soil hydroaeration during the week of November 19 due to the Thanksgiving holiday. Most sub contractor personnel are offsite.

EPA Region III performed a surprise site safety audit at the site. The audit was performed by members of the region III Core ER Safety Subcommittee and stressed an evaluation of the site HASP and its implementation. The auditors performed an extensive review of the HASP and a lengthy site walk thru.

### November 2007 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	9	4	684	L1D, L3D, L3C, H1A, G5A
<b>TOTALS</b>	65	31	17,567	

### November 2007 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic feet)
	9	10	161	20,307
<b>TOTALS</b>	19	18	5,610	40,692

### December 2007

EPA will initiate a revised Scope of Work (SOW) to address the two documented fireholes and the surficial MEC contamination, within the Phase II grids, south of the fireholes. This SOW will consist of the excavation and scraping of Phase II soils and placement of such under a cap as defined by COMAR 26 (MDE regulation). The location of this staging and cap area will be along the southern portion of the site and will encompass approximately four grids. A total of 60 grids are anticipated to be moved in this fashion. EPA's decision to implement this approach is driven by the fact that the largest quantity of MEC item found on site are the 2 inch tracer element. Over 16,000 (greater than 98% of total site MEC) such items have been detected and are presently staged in 4, 55 gallon drums on site. There are two types of tracers found to date: Mk11 and MK14. By definition, the 2 inch diameter cavity is comprised of an energetic filler material - phosphorous. This energetic material is not explosive. The Mk 11 tracer also has an integral self destruct element and contains a small amount of black powder. These items have survived the initial burn(s) and natural weathering over a period in excess of 50 years. In addition, due to extensive farming activities (over 50 years) these items have been dragged (moved, turned over) further exposing them to the natural elements. The tracers found to date have all undergone a vigorous inspection process to determine whether they can be classified as MEC or MD. This process consists of inserting a probe through the entire length of the central cavity to verify the presence of a filler (dirt or trace amounts of phosphorous). The presence of such, constitutes it's classification as MEC. The classification of a tracer as MEC is not an indication of the possible hazard presented by the item. It only shows that the presence of energetic filler could not be absolutely ruled out.

On December 6, 2007 the EPA OSC conducted a site meeting with the property owner and MDE to discuss these findings and to present/discuss the revised SOW. A site walk thru accompanied these discussions. The EPA OSC met with the Elkton County Commissioners on December 18, 2007.

In addition to these findings, EPA proposes to perform hazard characterization tests including reactivity on a select quantity of the staged tracer elements. Similar type tests were previously performed on the smaller primers and dets. These tests will help EPA further determine the direct hazard posed by these tracers.

The EPA OSC met with the Cecil County Commissioners on December 18, 2007. The purpose of this meeting was for the OSC to lay out this proposed SOW to them and to answer questions.

EPA completed hazard characterization tests including reactivity and leachability on a select quantity of the staged tracer elements. Approximately 72 MEC classified tracers were evaluated. Preliminary results reveal no hazard posed by these items.

The site was demobed for the holidays on December 21, 2007.

#### December 2007 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	5	0	3,759	G2C, D3D, E3C
<b>TOTALS</b>	70	31	21,326	

#### December 2007 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic feet)
	4	3	5	32,336
<b>TOTALS</b>	23	21	5,615	73,028

#### January 2008

The site was remobed on January 81, 2008 with a limited crew. One UXO team was mobed. The team continued magging and digging activities in remaining Phase I grids.

### January 2008 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	1	0	214	
<b>TOTALS</b>	71	31	21,540	

### January 2008 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic feet)
	0	0	0	0
<b>TOTALS</b>	23	21	5,615	73,028

### February 2008

The EPA and MDE met with the property owner on Feb. 5 to discuss and further the SOW for Phase II grids. Meetings are pending with EPA Region 3 management as well as the County Commissioners.

The EPA met with the property owner on Feb. 20, in Philadelphia to discuss site cleanup activities and status of lien waiver agreement.

### February 2008 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	4	1	1,446	L1C, L1B, L2B, L2C
<b>TOTALS</b>	75	32	22,986	

### February 2008 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic feet)
	0	0	0	0
<b>TOTALS</b>	23	21	5,615	73,028

## March 2008

Work on the Phase I grids continued.

The EPA met with the property owner on March 19, 2008 on site to discuss site cleanup activities and ways for property owner to provide in kind services inlieu of payments, under the lien waiver agreement. These discussions will continue.

As a result of the March 19, 2008 meeting between EPA and the property owner, the OSC provided part 1 of the cost estimate for work to be performed by the property owner. Part II of this request to follow. This information was used to determine the extent of the property owner's involvement in work performed at this site.

### March 2008 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	3	0	605	K3D, K3C, J1C
<b>TOTALS</b>	78	32	23,591	

### March 2008 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic feet)
	0	0	0	0
<b>TOTALS</b>	23	21	5,615	73,028

## April 2008

EPA and its ERRs contractor finalized the SOW for trommel sifting activities. The SOW provided the coordination document for EPA, Start and ERRs for the proposed screening operation of the firehole soils and previously staged soils from last year's activities. During the weeks of April 14 and 28, the approved trommel site prep sow was initiated which included construction of erosion control measures, pre staging of to be screened soils, construction of trommel pad and repair of Fisher Lane for ingress of the large trommel mixer. On April 28 excavation of the burn pit area began. Due to rain on April 28, air sampling for asbestos and air monitoring for particulates commenced on April 29.

#### April 2008 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	4	0	1,272	J1D, L1A, J1C
<b>TOTALS</b>	82	32	24,863	

#### April 2008 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic feet)
	0	0	0	0
<b>TOTALS</b>	23	21	5,615	73,028

#### April 2008 Pit and Trommel Progress Summary

	Pit Soil Excavated (cubic feet)	Quantity of MEC Found in Burn Pit	Quantity of Trommel Soil Processed (cubic feet)	Quantity of MEC Found
	11,030	0	0	0
<b>TOTALS</b>	11,030	0	0	0

#### May 2008

On 5/2/08 the trommel mechanical sifter was mobilized to the site and commenced the mechanical sifting of stockpiled soils from the previous year's hydroaeration pile. Testing of the 1 inch screen using 20mm dummy units proved to be successful, therefore EPA decided not to change to a smaller screen size.

Due to some initial startup issues and severe weather the machine was not fully tested. A total of 1491 MEC items were screened and captured by the trommel. The 1 inch screen was effective. QA of the clean soils from the trommel revealed only 5 tracer elements found.

Excavation and coarsing of the fireholes continues. Approximately one half of the fireholes is completed. Excavation to 5-6ft depths continue. Soil was excavated, coarsed thru the 4 inch screen and staged awaiting trommelling. A total of only 10 MEC items were found as of 5/28. This total includes a fused 40mm projectile unearthed on 5/21. This item was staged in the

magazine. Suspected friable ACM was bagged as per the SOW. EPA sampled bulk material to determine ACM and it was sent off to lab on 5/14. On 5/21 the lab results were received which revealed no asbestos detected.

The site Explosive Safety Submission (ESS) was ammended reflecting new soils processing technique (trommelling) and new USACE separation guidance. The DDESB issued an Interim Change to its Technical Paper 16, Revision 2 dated September 16, 2007. The new revision allows for the use of Hazard Fragmentation Distance of worse case MEC found. Previous guidance required a minimum separation of 200ft regardless of the item having a calculated HFD less than 200ft. Therefore based on the unintentional HFD for the 20mm projectile of 61ft the OSC has determined the new separation distance to be 100ft. This also allows for easy field determination of separation since the site is divided into 100ft grids.

Sampling and monitoring for airborne asbestos fibers and particulate continued on dry days as per AMSAP.

#### May 2008 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	1	0	28	K1D,G2D
<b>TOTALS</b>	83	32	24,891	

#### May 2008 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic feet)	Quantity of Soil Staged for Trommel (cubic feet)
	11	5	NA staged soil in pile for Trommel	NA	23,253
<b>TOTALS</b>	34	26	5,619	73,028	23,253

#### May 2008 Pit and Trommel Progress Summary

	Pit Soil Excavated (cubic feet)	Quantity of MEC Found in Burn Pit	Quantity of Trommel Soil Processed (cubic feet)	Quantity of MEC Found
	68,614	30	16,038	1,786
<b>TOTALS</b>	79,644	30	16,038	1,786

## June 2008

Due to the effectiveness of the trommel and its durability the OSC has determined that the next and final step will include the trommelling of the 35 remaining phase II grids. This reflects a change from a scraping and on site capping to a scraping and trommelling without any on site capping. Trommelled soils have been determined to be clean of MEC and therefore can be returned as surface soils to the site. Due to EPA's investigatory work including the surface line trenching report, evaluation of the tracer hazards and the evaluation of the trommel sifter for the month of May, the OSC has determined that the remaining aforementioned grids within the Phase II area can be trommelled safely, efficiently and cost effectively. An estimated volume of 20,000cyds of soil within these 35 grids (8acres) will be scraped, staged and trommelled commencing after the 4th of July site recess.

Sampling and monitoring for airborne asbestos fibers and particulate continued on dry days as per AMSAP. No site standards have been threatened for both asbestos and the particulate.

As of 6/5, 18,716cft of soil were processed thru the trommel. A total of 2,530 MEC items were screened and captured by the trommel. The 1 inch tracer element continued to be, by far, the largest component of MEC found. 2,485 tracers were processed thru the trommel representing over 98% of the total MEC captured by the trommel. In addition, 5 - 20mm projectiles were also captured thru the trommel. This coincides with what was found overall on site. In addition, as part of site QC activities, the contractor ran "dummy" tracers and 20mm thru the trommel at the start of daily activities. Test results indicated 100% effectiveness as reported. QA activities of the trommelled soils by the START contractor also revealed no findings of any type MEC within cleaned trommelled soils. Therefore the 1 inch screen continued to be effective and continued to be used.

Excavation and coarsing of the fireholes continued. The coarsing activity (pre screening thru an initial 4inch screen device) caused this excavation to move slowly as well as the heavy rains during the month. Approximately 3,700 cu yds of soils were excavated, coursed and moved to the trommel pad area. This represented roughly two thirds of the estimated soils to be excavated from the fireholes. Excavation to 5-6ft depths continued. A total of 510 MEC items were found. This number changed dramatically from the last reporting period because trommelling of these soils commenced during this period. Large amounts of scrap metal were removed thanks to the coarsing operation. A total of 3,024 lbs of scrap was removed from the fireholes and staged on site. Suspected friable ACM was bagged as per the SOW

On June 17, 2008 surface soils within grid L1d were scraped and staged on plastic. This small section of surface soils were discolored and sampled at the end of 2007. Elevated TNT results led to this scraping. Approximately 20cy of this soil were staged pending offsite disposal.

On June 24, 2008 the OSC conducted an on site meeting with the Cecil County Commissioners. MDE representatives as well as media reps were in attendance. The purpose of this onsite

meeting was to discuss site work, show the MEC items found and for viewing of the trommel sifting and the fireholes excavation operations. Cecil County Commissioners appeared to be content with the activity and the approach for site completion.

EPA OSC has initiated disposal paperwork for various waste streams. Included initially were the munitions debris drums (12) and the tracer elements (also 12 drums). These drums were staged in the conex box. County Commissioners and the media were able to verify the volume of MEC and debris collected before the material was shipped.

#### June 2008 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	5	0	10	L2A
<b>TOTALS</b>	<b>88</b>	<b>32</b>	<b>24,901</b>	

#### June 2008 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic yards)	Quantity of Soil Staged for Trommel (cubic feet)
	7	3	NA	NA	17,901
<b>TOTALS</b>	<b>41</b>	<b>29</b>	<b>5,619</b>	<b>73,028</b>	<b>41,154</b>

#### June 2008 Pit and Trommel Progress Summary

	Pit Soil Excavated (cubic feet)	Quantity of MEC Found in Burn Pit	Quantity of Trommel Soil Processed (cubic feet)	Quantity of MEC Found
	57,829	719	48,148	2,229
<b>TOTALS</b>	<b>137,473</b>	<b>749</b>	<b>64,186</b>	<b>4,015</b>

#### July 2008

On July 1, 2008 the START contractor performed field testing of a pre-designated TNT surface soil hotspot in grid F3b. This area was previously identified by MDE. Test results revealed a small surface zone exhibited elevated levels similar to the MDE results. This soil was scraped,

sifted for MEC items and placed with similar soils from grid L1d for possible offsite disposal. No more than 3 cy of soil was scraped and staged.

No trommelling activities occurred during the week of July 4<sup>th</sup>.

On July 7, 2008 an additional six UXO technicians from USA Environmental were mobilized to the site in anticipation of implementation of Appendix K of the Work Plan. This Appendix outlines the implementation of a pan scraping approach to the remaining 30 sub grids and is to be implemented by the property owner's operator and his equipment under an AOC. Unfortunately due to some last minute legal concerns the work was not initiated. Therefore this new team was placed in support roles to existing UXO tech activity.

During the week of July 7 trommel activities resumed and most of the stockpiled soils were trommelled before the end of the week. Of the approximately 10,036 MEC items recovered off the trommel since it was mobilized, 9,896 are tracers. Therefore 98.6% of the total MEC sifted thru the trommel are found to be the tracer element. In addition 7 fused 40mm and 21 fused 20mm artillery items were found via this sifting operation and placed in the on site explosive magazines.

Sampling and monitoring for airborne asbestos fibers and particulate continued on dry days as per AMSAP. No site standards have been threatened for both asbestos and the particulate.

On July 15, 2008 22 drums of munitions debris was transported off site for disposal at a smelter in Wilmington, DE. This material was shipped as non hazardous waste. Each drum weighed approximately 800 lbs.

#### July 2008 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	6	3	2,645	F2C
<b>TOTALS</b>	94	35	27,546	

#### July 2008 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic yards)	Quantity of Soil Staged for Trommel (cubic feet)
	4	0	NA	NA	64,355
<b>TOTALS</b>	45	29	5,619	73,028	105,509

### July 2008 Pit and Trommel Progress Summary

	Pit Soil Excavated (cubic feet)	Quantity of MEC Found in Burn Pit	Quantity of Trommel Soil Processed (cubic feet)	Quantity of MEC Found
	29,124	4,451	36,558	10,104
<b>TOTALS</b>	166,597	5,200	64,186	14,119

### August 2008

EPA entered into an AOC with the property owner on August 8, 2008 in which the property owner agreed to complete work as described in Appendix K of the Site Work Plan. Appendix K outlines the implementation of a pan scraping approach to the remaining grids. Pan Scraping activities as described in Appendix K began on August 11, 2008. There were 31 Grids scrapped and 12 Grids passed Government QA. Sixteen of the Grids required further digging after pan scraping during August.

EPA and GES are evaluating disposal options for the MEC waste stream which may include the large quantity of tracers. It is anticipated that at least 60 drums of this material will be generated.

Contractors continued trommel sifting activities and excavation of the firehole as per SOW and AHA.

The property owner's contractor began scraping grids on August 11, 2008 using a pan scraper. The OSC provided direction to the property owner on which grids were to be scraped and to which depth. The depth of scraping ranged from 8" – 16" based on magnetometer surveys and depending on how deep MEC and MD are found in each area. Scraped soils were staged on a predetermined area of the site pending trommel sifting.

### August 2008 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	1	2	128	NONE
<b>TOTALS</b>	95	37	27,674	

### August 2008 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic yards)	Quantity of Soil Staged for Trommel (cubic feet)
	0	2	NA	NA	64,355
<b>TOTALS</b>	45	31	5,619	73,028	105,509

### August 2008 Pit and Trommel Progress Summary

	Pit Soil Excavated (cubic feet)	Quantity of MEC Found in Burn Pit	Quantity of Trommel Soil Processed (cubic feet)	Quantity of MEC Found
	38,239	9,122	51,250	944
<b>TOTALS</b>	204,836	14,322	115,436	15,063

### September 2008

Final QA of the fireholes was conducted on 9/5/08.

Trommel sifting activities, Phase I mag and digging and pan scraping continued.

Since firehole excavation was completed, and based on previous air sampling data, sampling for airborne asbestos fibers was terminated. No site standards have been threatened for both asbestos and particulate.

Pan scraping was completed on September 16. There were 16 Grids pan scrapped during September, and 21 Grids that passed QA. There were 15 Grids that required further digging after pan scrapping during September.

On September 22, 30 drums of munitions debris was transported off site for disposal at a smelter in Wilmington, DE. This material was shipped as non hazardous waste. Each drum weighed approximately 800 lbs.

### September 2008 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	2	5	33	NONE
<b>TOTALS</b>	97	42	27,707	

### September 2008 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic yards)	Quantity of Soil Staged for Trommel (cubic feet)
	0	0	NA	NA	0
<b>TOTALS</b>	45	31	5,619	73,028	105,509

### September 2008 Trommel Progress Summary

	Quantity of Trommel Soil Processed (cubic feet)	Quantity of MEC Found
	57,386	71,276
<b>TOTALS</b>	172,822	86,339

### October 2008

Trommel sifting activities, Phase I mag and digging and air monitoring continued.

QA of 5 of the Grids pan scrapped were completed this month.

### October 2008 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	0	0	2,542	NONE
<b>TOTALS</b>	97	37	30,216	

### October 2008 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic yards)	Quantity of Soil Staged for Trommel (cubic feet)
	0	0	NA	NA	NA
<b>TOTALS</b>	45	31	5,619	73,028	105,509

### October 2008 Trommel Progress Summary

	Quantity of Trommel Soil Processed (cubic feet)	Quantity of MEC Found
	75,298	67,313
<b>TOTALS</b>	248,120	153,652

### November 2008

Trommel sifting activities, Phase I mag and digging and air monitoring continued.

QA of 2 of the Grids pan scrapped were completed this month.

On November 12 GES, RMC and USA met to discuss performing the demo and burn on the MEC in the magazines. They discussed who was responsible ofr each activity including SOW preparation.

The site was closed for the Thanksgiving holiday on November 27 and 28.

### November 2008 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	0	0	NONE	NONE
<b>TOTALS</b>	97	37	30,216	

### November 2008 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic yards)	Quantity of Soil Staged for Trommel (cubic feet)
	0	9	NA	NA	NA
<b>TOTALS</b>	45	40	5,619	73,028	105,509

### November 2008 Trommel Progress Summary

	Quantity of Trommel Soil Processed (cubic feet)	Quantity of MEC Found
	117,208	57,892
<b>TOTALS</b>	356,228	211,544

### December 2008

Trommel sifting activities and air monitoring continued. GES made preparations of off site disposal of drummed MEC and TNT contaminated soil.

On December 17 and 18, 160 tons of TNT contaminated soils were transported off site for disposal as non-hazardous waste. On December 18 50 drums on MEC, mostly tracers, were transported off site for disposal as hazardous waste to Clean Harbors.

On December 25 the site was closed for the holiday.

### December 2008 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	0	0	NONE	NONE
<b>TOTALS</b>	97	37	30,216	

### December 2008 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic yards)	Quantity of Soil Staged for Trommel (cubic feet)
	0	0	NA	NA	NA

<b>TOTALS</b>	45	40	5,619	73,028	105,509
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#### December 2008 Trommel Progress Summary

	Quantity of Trommel Soil Processed (cubic feet)	Quantity of MEC Found
	59,382	20,770
<b>TOTALS</b>	415,610	232,314

#### January 2009

Trommel sifting activities and air monitoring continued. Trommel sifting was completed on January 22, and it was transported offsite on January 29.

QA of 1 of the Grids pan scrapped were completed this month.

On January 20 and 21, 2009 MEC stored on site in magazines which was not suitable for shipment off site was burned in buried concrete boxes. Some material was also detonated using explosives. The burning and detonation of MEC items was conducted to ensure that all explosive constituents in MEC were removed prior to shipment off site. These operations were conducted by trained UXO Techs.

#### January 2009 Phase I Grid Progress Summary

	Phase I Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found	Partial Grids QA'D For Phase I that need Phase II Work
	0	1	543	NONE
<b>TOTALS</b>	97	38	30,756	

#### January 2009 Phase II Grid Progress Summary

	Phase II Grids Started	Complete Grids Passed Govt. QA	Quantity of MEC Found Phase II	Quantity of Soil Processed Phase II (cubic yards)	Quantity of Soil Staged for Trommel (cubic feet)
	0	0	NA	NA	NA
<b>TOTALS</b>	45	40	5,619	73,028	105,509

### January 2009 Trommel Progress Summary

	Quantity of Trommel Soil Processed (cubic feet)	Quantity of MEC Found
	2,019	2,126
<b>TOTALS</b>	417,629	234,440

### February 2009

QA of all remaining grids were completed this month. A total of 175 grids were cleared and QA'd by EPA.

On February 13, 2009 a small quantity of MEC which could not be transported off site was burned in buried concrete boxes. The burning of MEC items was conducted to ensure that all explosive constituents in MEC were removed prior to shipment off site. These operations were conducted by trained UXO Techs.

On February 17, 2009 37 drums (approximately 28,270 lbs) of MEC containing mainly tracers was shipped off site for disposal as hazardous waste at an appropriate facility. On the same date, 15 drums (approximately 12,000 lbs) of munitions debris was shipped off site for recycling as scrap metal.

Demob activities were conducted and the road barricades were removed on February 25.